

# **Explanation of Significant Differences**

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**Explanation of Significant Differences  
for the Record of Decision for the Blackbird Mine  
Lemhi County, Idaho**

# **Explanation of Significant Differences for the Record of Decision for Blackbird Mine Lemhi County, Idaho**

## **1. Introduction and Statement of Purpose**

The U.S. Environmental Protection Agency is issuing this Explanation of Significant Differences (ESD) to document two changes to the Record of Decision for remedial actions at the Blackbird Mine site, signed on March 3, 2003 (2003 ROD). This is the second ESD for this site. The first ESD was issued on July 27, 2007 to modify the cobalt water quality cleanup level at the site from 0.038 mg/L to 0.086 milligrams/liter (mg/L) or parts per million (ppm) based on site-specific toxicity testing. The cobalt water quality cleanup level remains at 0.086 mg/L and is not modified by this ESD.

This ESD was prepared in accordance with Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA/Superfund) and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This ESD documents two significant changes of the remedy selected in the 2003 ROD for the Blackbird Mine site. The remedy changes and the basis for them are summarized below:

- The 2003 ROD did not establish cleanup levels for cobalt in mine site soils (surface soils in the former mine area that site maintenance workers may be exposed to) and overbank deposits (deposits adjacent to streams downstream from the mine site that residents and recreational users may be exposed to) because the soils did not present a risk to human health. A groundwater cleanup level, based on protection of human health for cobalt was established at 1.53 (mg/L) in the 2003 ROD based on a worker exposure scenario at the mine site (see Table 1 for a summary of cleanup levels for all contaminants of concern for all site media). In 2008, EPA published new toxicity values for human exposures to cobalt. Revised risk calculations based on the new toxicity values indicate that cobalt concentrations in some of the overbank deposits and groundwater at the mine site are greater than the revised risk-based levels. Therefore, this ESD establishes cobalt cleanup levels for overbank deposits and revises the cobalt cleanup level for groundwater to address human health risks. Soils at the mine site did not show a risk.
- The 2003 ROD listed the arsenic soil cleanup level for a day-use recreational scenario for U.S. Forest Service (USPS) lands along Panther Creek at 590 milligrams/kilogram (mg/kg). This cleanup level did not consider the differences in accessibility to the USPS lands depending upon which side of Panther Creek the lands are located. In 2010, the USPS requested that EPA review the recreational use assumptions for USPS lands since recreational users must cross Panther Creek in order to access these lands. Based on this review, EPA concurred with the USPS that the use assumptions should be changed to reflect a revised recreational-use scenario and this ESD therefore revises the arsenic cleanup level for the USPS lands that require fording Panther Creek from 590 mg/kg to 1180 mg/kg.

The human health cleanup levels for the various media that are established or changed by this ESD are to assure that potential carcinogenic risks do not exceed  $1.0 \times 10^{-4}$  and that non-

carcinogenic risks do not exceed hazard quotients (HQs) of 1.0. The remedial action objectives (RAOs) included in the 2003 ROD are not changed by this ESD. This ESD will become part of the Blackbird Mine administrative record. The Blackbird Mine administrative record is available to the public at the following locations:

Salmon Public Library  
204 Main Street  
Salmon, ID

Hours: Monday through Wednesday 10:00 am – 6:00 pm, Thursday 10:00 am – 7:00 pm, Friday and Saturday 10:00 am to 5:00 pm

U.S. EPA, Idaho Operations Office  
1435 North Orchard Street  
Boise, ID

Hours: Monday through Friday 8:00 am – 5:30 pm

U.S. EPA, Region 10  
1200 Sixth Avenue  
Records Center – 7<sup>th</sup> Floor  
Seattle, WA

Hours: Monday through Friday 8:30 am – 4:30 pm

## **2. Site Location, History, Contamination, and Selected Remedy**

### **2.1 Summary of Site Location and History**

The Blackbird Mine is an inactive mine located in Lemhi County, Idaho, approximately 13 miles south of the Salmon River and 21 miles west of Salmon, Idaho, within the Salmon-Challis National Forest (Figure 1). Mining of gold, cobalt, and copper resulted in about 12 acres of an open pit, 14 miles of underground workings, 4.8 million tons of waste rock in multiple waste rock piles, and two million tons of tailings located within the West Fork Tailings Impoundment. The mine facilities were located on both sides of a topographical divide, with facilities on the north side of the divide within the Bucktail Creek drainage and facilities on the south side of the divide within the Blackbird Creek drainage. This ESD focuses on modifications to the 2003 ROD remedy within the Blackbird Creek drainage and downstream within the Panther Creek drainage.

Cleanup actions have been conducted at the site since 1993 as both removal and remedial actions. From 1993 to 2002, early actions were performed under EPA's removal authority, and included collection and treatment of contaminated waters, stabilization and/or relocation of waste rock piles, stabilization of the West Fork Tailings Impoundment, removal of contaminated soils along Blackbird Creek and Panther Creek with disposal at the West Fork Tailings Impoundment, and construction of three small settling basins along Blackbird Creek. The EPA selected a remedy in the 2003 ROD to address the releases from the mine site that remained following the early actions. The 2003 ROD addressed surface water, sediments, groundwater and contaminated soils. Remedial actions selected in the 2003 ROD include incorporation of an ongoing operation and maintenance of the early actions, additional collection and treatment of contaminated waters, additional removals/stabilization of contaminated overbank and in-stream deposits along Blackbird Creek, removals of overbank deposits along Panther Creek, and establishment of institutional controls. All cleanup actions at the site have been conducted by the Blackbird Mine Site Group (BMSG) under oversight by EPA. The EPA is the lead agency at the site and the U.S. Forest Service (USFS) and the Idaho Department of

Environmental Quality (IDEQ) are support agencies. The remedial action has been coordinated and supported by the Natural Resource Trustees Council, which include the State of Idaho, USPS, and the National Oceanic and Atmospheric Administration (NOAA).

## **2.2 Summary of Site Contamination**

Historic mining activities resulted in waste rock, tailings, and underground workings, which are the largest sources of contamination to soils, surface water, and groundwater at the Blackbird Mine site (Figure 2). Acid rock drainage from waste rock piles, the underground workings, the Blacktail Pit, the West Fork Tailings Impoundment, and deposits along Blackbird Creek resulted in elevated levels of arsenic, cobalt, and copper in surface water and groundwater. Erosion from waste rock piles and tailings deposits during high flow events resulted in transport of materials elevated in arsenic and cobalt with subsequent deposition at overbank and in-stream areas along Blackbird Creek and Panther Creek. The fisheries and aquatic resources downstream from the Blackbird Mine site were impacted by arsenic, cobalt, and copper in the water column and in-stream sediments. Waste materials elevated in arsenic and cobalt were deposited at overbank areas along Panther Creek at concentrations that exceed human health risk-based concentrations. The site contamination was addressed through the remedial actions specified in the 2003 ROD (see Section 2.3 below for a discussion of the remedial actions).

Subsequent to the issuance of the ROD, it was discovered that oxyhydroxide floes (very fine-grained particles), which are generated from groundwater seepage at the West Fork Tailings Impoundment, are elevated in arsenic and copper. These oxyhydroxide floes are deposited along Blackbird Creek downstream from the tailings impoundment, where they are subject to remobilization and downstream transport during high flow events. It has been estimated that the oxyhydroxide floes constitute approximately 10% of the load in Blackbird Creek that could become remobilized. Also subsequent to the ROD, high flow events in Blackbird Creek in 2003, 2008 and 2009 remobilized overbank and in-stream materials elevated in arsenic and cobalt and deposited them along Panther Creek at concentrations above the cleanup levels. The recontamination risks from Blackbird Creek materials deposited along Panther Creek were partially addressed through additional removals and stabilization in Blackbird Creek in 2004, 2005, 2009 and 2010.

## **2.3 Selected Remedy in the 2003 Record of Decision**

The remedy selected in the 2003 ROD included remedial action objectives (RAOs) for surface soils, groundwater, surface water, and sediments and are listed in Section 8.2 of the ROD. To achieve the RAOs, the 2003 ROD selected remedial actions to address contaminated overbank deposits, groundwater, surface water, and in-stream sediments. The 2003 ROD required maintenance of the early removal actions and set forth additional actions required to attain the RAOs. The selected remedy requires long-term operation and maintenance and includes the following in each drainage basin.

### **2.3.1 Blackbird Creek Drainage Basin**

- Collection and treatment of upper Meadow Creek seeps
- Continued operation of the water treatment plant
- Construction of a soil cover over the West Fork Tailings Impoundment
- Collection and treatment of seepage from the West Fork Tailings Impoundment

- Removal of overbank deposits with armoring of selected deposits along Blackbird Creek
- Removal of in-stream sediments and overbank deposits in the vicinity of the Panther Creek Inn (PCI)
- Establishing institutional controls and physical restrictions
- Natural recovery of Blackbird Creek sediments
- Operation and maintenance of all facilities
- Five year reviews

### **2.3.2 Bucktail Creek Drainage Basin**

- Collection and treatment of Bucktail Creek groundwater seeps
- Continued operation of the Water Treatment Plant
- Diversion of Bucktail Creek waters to bypass South Fork Big Deer Creek
- Establishing institutional controls and access restrictions
- Natural recovery of Bucktail Creek, South Fork of Big Deer Creek and Big Deer Creek sediments
- Operation and maintenance of all facilities
- Five year reviews

### **2.3.3 Panther Creek Drainage Area**

- Selective removal of overbank deposits
- Establishing institutional controls
- Natural recovery of Panther Creek sediments
- Operation and maintenance of all facilities
- Five year reviews

## **2.4 2007 ESD**

The first ESD to the 2003 ROD was issued by the EPA on July 27, 2007 to modify the cobalt surface water quality cleanup level specified in the 2003 ROD. This modification was based on site-specific aquatic toxicity testing and changed the cobalt water quality cleanup level from 0.038 mg/L to 0.086 mg/L. The revised cobalt water quality cleanup level included in the 2007 ESD is not modified by this ESD.

## **3. Basis for the Significant Differences**

### **3.1 Additions/Changes to Cobalt Cleanup Levels**

EPA selected cobalt cleanup levels for surface water and in-stream sediments in the 2003 ROD to protect aquatic receptors. As noted above, the cobalt cleanup level for surface water was modified in the 2007 ESD from 0.038 mg/L to 0.086 mg/L. The cobalt cleanup levels for in-stream sediments specified in the 2003 ROD have not changed (cleanup levels for all media and contaminants of concern are summarized in Table 1). Cleanup levels for cobalt in groundwater were established in the 2003 ROD to protect human receptors. Cleanup levels for cobalt in mine site soils (surface soils within the former mine site) and overbank deposits (adjacent to streams downstream from the mine site) were not established in the 2003 ROD. Cleanup levels for these media were not established because concentrations of cobalt in these media did not result in potential cancer risks that exceed the EPA risk management range (1E-06 to 1E-04) or hazard

quotients (HQs) greater than 1, the threshold level that the EPA considers acceptable for potential non-cancer effects. In August 2008, EPA published revised toxicity values for cobalt. Revised risk calculations based on the revised toxicity values indicate that some overbank deposits and groundwater at the site have cobalt concentrations that exceed the HQ of 1 for non-cancer risks for ingestion of groundwater under worker and residential use scenarios as well as ingestion of soils under recreational use and residential use scenarios. Concentrations of cobalt in mine site soils still do not exceed the revised risk-based levels; therefore cobalt cleanup levels for mine site soils are not necessary. Section 4 below describes the new cobalt cleanup levels for overbank deposits and the revised cobalt cleanup levels for groundwater.

### **3.2 Change in Soil Cleanup Levels on Selected USFS Lands**

Prior to the 2003 ROD, contaminated overbank deposits along Panther Creek were removed on USPS lands as part of the early actions using the same cleanup level as established in the 2003 ROD. The 2003 ROD listed the arsenic soil cleanup level for a day-use recreational scenario along Panther Creek at 590 mg/kg. This cleanup level was based on use assumptions for recreational users of USPS lands along Panther Creek. The USPS lands are located on both sides of Panther Creek and the accessibility for public use depends upon which side of the creek the lands are located. The USPS lands located on the same side of Panther Creek as the road along Panther Creek have convenient access. However, the USPS lands located on the opposite side of Panther Creek from the road are less accessible and require wading across Panther Creek. Regardless, the use assumptions for establishing the arsenic recreational cleanup level in the 2003 ROD did not differentiate in terms of which side of the creek the USPS lands are located on.

Some of the overbank areas on USPS lands along Panther Creek became re-contaminated with Blackbird Creek sediments that were being mobilized and re-deposited during the 2008 and 2009 high runoff events. In June 2010, the USPS sent a letter to the EPA regarding the need for additional cleanups and the recreational use assumptions at USPS lands along Panther Creek (*Letter from Russ Bjorklund/USFS to Fran Allans/EPA dated June 9, 2010*). The USPS letter indicated that USPS lands across Panther Creek from the Panther Creek Road are rarely accessed by recreational users. Based on this more recent information, the EPA determined that the exposure assumptions in our initial risk evaluation were over estimated. The EPA re-calculated the cleanup levels for the recreational scenario for USPS lands across Panther Creek from the road. Details of the revised recreational cleanup level are provided in Section 4 below. The revised cleanup level for arsenic is within EPA's acceptable risk ranges and is therefore protective of human health. Figure 3 shows the four areas recontaminated by the 2008 and 2009 high spring runoff events on USPS lands across Panther Creek where additional cleanup actions to address arsenic contamination are not required based on the revised arsenic cleanup level.

## **4. Description of Significant Differences**

### **4.1 Additions/Changes to Cobalt Cleanup Levels**

The 2008 revisions to the cobalt toxicity levels resulted in changes to the cobalt cleanup levels for certain of the site media. The media requiring changes are those media where potential exposures to human receptors drive the cleanup levels which include overbank deposits along Panther Creek, and groundwater. Descriptions of the changes to the cobalt cleanup levels for the various site media are provided below.

#### **4.1.1 Overbank Deposits and Mine Site Soils**

Cobalt cleanup levels to protect human health at overbank deposits at properties along Panther Creek were calculated based upon the cobalt toxicity values revised in 2008 by the EPA and based on the exposure frequencies used to calculate arsenic cleanup levels in the 2003 RGD. The cobalt cleanup levels for overbank deposits and sediments within the high water mark (sediments on the stream banks that are exposed during low flows) are included in a memorandum titled *Preliminary Remediation Goals for Cobalt at the Blackbird Mine Site*, prepared for the EPA by CH2M HILL, May 19, 2011 (2011 PRO memo). The cobalt cleanup levels for overbank areas along Panther Creek include:

- Full-time residential scenario (exposure frequency = 350 days per year) – 97 mg/kg
- Recreational day-user scenario (exposure frequency = 14 days per year) – 390 mg/kg
- Recreational day-user scenario on Forest Service lands across Panther Creek (exposure frequency = 7 days per year) – 780 mg/kg
- Camping scenario (exposure frequency = 21 days per year) – 260 mg/kg
- Camping scenario (exposure frequency = 30 days per year) – 180 mg/kg

Cleanup levels for cobalt for lower Blackbird Creek downstream from the mine gate (14 days/year and 2 hours/day) and upper Blackbird Creek upstream from the mine gate (7 days/year and 2 hours/day) were developed based on lower exposure frequencies because these areas are used much less frequently by recreationists than the areas along Panther Creek. The cleanup levels for cobalt for overbank deposits and in-stream sediments for these areas are: 2,700 mg/kg downstream from the mine gate and 5,500 mg/kg for upstream from the mine gate (2011 PRO memo). All cleanup levels at the site for all media are summarized in Table 1.

Risk calculations for mine site soils based on the revised cobalt toxicity values indicate that the concentrations of cobalt in mine site soils are lower than the revised risk-based levels. Therefore, action to address cobalt in mine site soils is not warranted and a cleanup level for cobalt in mine site soils is not required.

#### **4.1.2 Surface Water and In-Stream Sediments**

The surface water cobalt cleanup level for the site was established at 0.038 mg/L in the 2003 RGD but was changed to 0.086 mg/L in the 2007 ESD based on site-specific toxicity testing of aquatic organisms. This ESD does not change the surface water cobalt cleanup level set in the 2007 ESD. The cobalt cleanup level for Panther Creek in-stream sediments was established in the 2003 RGD based on background concentrations. Therefore, this ESD does not change the Panther Creek in-stream sediment cleanup level for cobalt.

#### **4.1.3 Groundwater**

There are currently no Maximum Contaminant Levels (MCLs) established for cobalt in groundwater. Therefore, cobalt cleanup levels based on the revised cobalt toxicity values were calculated for groundwater for the residential and mine site worker scenarios. The revised residential cobalt cleanup level is based on an age-adjusted exposure scenario (i.e., six years of exposure as a child drinking one liter of water per day and 24 years of exposure as an adult drinking two liters of water per day). The revised residential cobalt cleanup level using the age-adjusted residential scenario is 0.009 mg/L (2011 PRO memo). Currently, there are no wells on residential properties that exceed the residential cleanup level for cobalt.

The revised mine site worker cobalt cleanup level is based on the same worker exposure assumptions that were used in the ROD (i.e. adult, drinking 2 liters of water per day, 167 days/year for 25 years). The revised cleanup level for cobalt in groundwater for the mine site worker is 0.023 mg/L (2011 PRO memo).

Institutional controls for the Blackbird Mine site, including the PCI property recently purchased by an entity comprised of BMSG members, will include measures to assure that groundwater with cobalt concentrations exceeding these revised cleanup levels is not used for human consumption.

#### **4.2 Revisions to Recreational Soil Cleanup Levels for Arsenic and Cobalt**

As discussed in Section 3.3, contaminated overbank deposits along Panther Creek were removed on USPS lands as part of the early actions (the early actions were conducted as removal actions and occurred prior to the issuance of the 2003 ROD). The arsenic cleanup level for a day-use recreational scenario in overbank areas along Panther Creek included in the 2003 ROD is 590 mg/kg. This cleanup level was adopted from the early removal action cleanup levels and is based on an exposure frequency of 14 days per year for recreational users of USFS lands along Panther Creek. In June 2010, the USFS sent a letter to the EPA regarding the need for cleanups and the recreational use assumptions at USPS lands along Panther Creek (*Letter from Russ Bjorklund/USFS to Fran Allans/EPA dated June 9, 2010*). This letter indicated that USFS lands across Panther Creek from the Panther Creek Road are rarely accessed by recreational users. The letter also indicated that the USPS did not believe that the disturbances associated with cleanups at these isolated areas are warranted given the infrequent recreational use. Based on the USFS letter, EPA re-evaluated the exposure use assumptions and developed the cleanup levels for a day-use recreational scenario for USFS lands located on the opposite side of Panther Creek from the road. Based on the accessibility to the USFS land this re-evaluation used an exposure frequency for lands on the opposite side of Panther Creek from the road (i.e., that require fording of Panther Creek) of half of that for the lands on the same side of the road as Panther Creek (2011 PRG memo). The corresponding cleanup levels for overbank deposits for the reduced exposure frequency of 7 days per year are 1,180 mg/kg arsenic and 780 mg/kg cobalt (based on non-cancer risk of a HQ of 1). Four areas on USPS lands along Panther Creek would be affected by the change in cleanup levels (see Figure 3). The current levels of arsenic contamination at these areas do not exceed the revised cleanup level of 1,180 mg/kg and therefore no cleanup actions are required based on arsenic concentrations. However, the sampling at the four areas on USPS lands did not include analysis for cobalt. Therefore, additional sampling needs to be performed to determine if cobalt levels are above 780 mg/kg in these four areas to confirm whether or not cleanup is required based on cobalt concentrations. Table I summarizes the cleanup levels for this and all other media at the site.

### **5. Costs**

The costs associated with this ESD include the following:

- Additions/Changes to Cobalt Cleanup Levels. The only cost associated with the change in cobalt cleanup levels resulting from the revised cobalt toxicity values is for additional cleanups of certain overbank areas at private properties along Panther Creek. The cleanups at overbank areas along Panther Creek re-contaminated by high flow events in Blackbird Creek are generally driven by arsenic concentrations. This is because arsenic and cobalt tend to be



co-located at most overbank areas, and where cleanup is required, the arsenic concentrations are typically greater than the cleanup levels, regardless of the cobalt concentrations. Only in isolated overbank areas are the cobalt concentrations greater than the cleanup levels while the arsenic concentrations are lower than the cleanup levels. The costs for cleanups in overbank areas driven by the cobalt concentrations (and therefore addressed by this ESD) are estimated at \$25,000 which includes excavation, disposal, and replacement of approximately 370 cubic yards of soil. There are no other costs associated with the changes in the cobalt cleanup levels for other media.

- Revisions to Soil Cleanup Levels on USPS Lands. The change in the recreational cleanup levels for USPS lands across Panther Creek from the road results in a decrease in costs because it is likely that most of these areas will not be required to be cleaned up under the revised cleanup levels. The amount of the cost reduction is estimated at \$68,000, which would include excavation, disposal, and replacement of approximately 600 cubic yards of soils.

## **6. Support Agency Comments**

The Idaho Department of Environmental Quality and the Salmon-Challis National Forest have been involved in the changes presented in this ESD and concur with the ESD.

## **7. Statutory Determinations**

The EPA believes that the remedy for the Blackbird Mine Site, as modified by this ESD, satisfies CERCLA §121 and remains protective of human health and the environment, complies with federal and state requirements determined to be applicable or relevant and appropriate to the remedial actions, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. This ESD does not address principal threat wastes through treatment.

## **8. Public Participation Compliance**

The EPA published a notice in the Salmon Recorder-Herald regarding this ESD in accordance with the requirements set out in NCP §300.435(c)(2)(i). In July 2011, the EPA put a draft of this ESD out for public comment. A responsiveness summary documenting EPA's responses to the comments received during the comment period is attached to this ESD.

## **9. Explanation of Significant Changes from the Draft ESD**

The draft ESD, issued for public comment on July 15, 2011, proposed three changes to the Selected Remedy, the two documented in this ESD and a third, the addition of a diversion structure and settling basins for Blackbird Creek waters, located near the mouth of Blackbird Creek on the old Panther Creek Inn property.

After consideration of additional technical information prepared by the BMSG and consideration of public and agency comments received, the EPA decided to defer the decision regarding the need for the diversion structure and settling basins pending further monitoring and evaluation of the effectiveness of the stabilization measures along Blackbird Creek that have been conducted to date. The additional technical information prepared by the BMSG is in a draft document titled *Supplemental Blackbird Creek Evaluation Report to Address Migration of Blackbird Creek*

*Sediments*, prepared for the BMSG by Golder Associates, July 8, 2011 (SBCER). The SBCER and the EPA's comments on the SBCER have been added to the Administrative Record.

**Authorizing Signature**

Cami Grandinetti  
Cami Grandinetti  
Program Manager  
Remedial Cleanup Program  
U.S. Environmental Protection Agency

5/31/12  
Date

## Tables and Figures

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**Table 1**  
**Summary of Cleanup Levels for Blackbird Mine Site**  
(Shaded Values are Changes from 2003 ROD)

Drainage/Area of Drainage	Media	Cleanup Levels Established by 2003 ROD			Cleanup Levels Established by this ESD			Risk Driver
		Arsenic	Cobalt	Copper	Arsenic	Cobalt	Copper	
Blackbird Creek/above mine gate	Overbank deposits and in-stream sediments	8,500 mg/kg	None <sup>a</sup>	None <sup>a</sup>	8,500 mg/kg	5,500 mg/kg	None <sup>a</sup>	Human health
Blackbird Creek/below mine gate	Overbank deposits and in-stream sediments	4,300 mg/kg	None <sup>a</sup>	None <sup>a</sup>	4,300 mg/kg	2,700 mg/kg	None <sup>a</sup>	Human health
Blackbird Creek	Surface Water	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Aquatics
Panther Creek/ residential areas	Overbank deposits <sup>c</sup>	100 mg/kg	None <sup>a</sup>	None <sup>a</sup>	100 mg/kg	97 mg/kg	None <sup>a</sup>	Human health
Panther Creek/ USPS campgrounds	Overbank deposits <sup>c</sup>	280 mg/kg	None <sup>a</sup>	None <sup>a</sup>	280 mg/kg	180 mg/kg	None <sup>a</sup>	Human health
Panther Creek/ undeveloped campgrounds	Overbank deposits <sup>c</sup>	400 mg/kg	None <sup>a</sup>	None <sup>a</sup>	400 mg/kg	260 mg/kg	None <sup>a</sup>	Human health
Panther Creek/ recreational areas on road side of Panther Creek	Overbank deposits <sup>c</sup>	590mg/kg	None <sup>a</sup>	None <sup>a</sup>	590mg/kg	390 mg/kg	None <sup>a</sup>	Human health
Panther Creek/ recreational areas on opposite side of Panther Creek from road	Overbank deposits <sup>c</sup>	590mg/kg	None <sup>a</sup>	None <sup>a</sup>	1,180 mg/kg	780 mg/kg	None <sup>a</sup>	Human health
Panther Creek	In-stream sediments	35 mg/kg	80 mg/kg	149 mg/kg	35 mg/kg	80 mg/kg	149 mg/kg	Aquatics
	Surface waters	0.014 mg/L <sup>d</sup>	0.038 mg/L <sup>e</sup>	IWQS <sup>f</sup>	0.014 mg/L <sup>d</sup>	0.086 mg/L <sup>e</sup>	IWQS <sup>f</sup>	Aquatics



Drainage/Area of Drainage	Media	Cleanup Levels Established by 2003 ROD			Cleanup Levels Established by this ESD			Risk Driver
		Arsenic	Cobalt	Copper	Arsenic	Cobalt	Copper	
Residential	Groundwater	0.010 mg/L	None <sup>a</sup>	1.30 mg/L	0.010 mg/L	0.009 mg/L	1.30 mg/L	Human health
Mine Site	Groundwater	0.010 mg/L	1.53 mg/L	3.06 mg/L	0.010 mg/L	0.023 mg/L	3.06 mg/L	
Mine Site	Soils	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	Human health
Bucktail Creek, South Fork Big Deer Creek, and Big Deer Creek	Overbank Deposits	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	None <sup>a</sup>	Human health
Bucktail Creek	In-stream sediments and surface waters	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Narrative goal <sup>b</sup>	Aquatics
South Fork Big Deer Creek	In-stream sediments	35 mg/kg	436 mg/kg	637 mg/kg	35 mg/kg	436 mg/kg	637 mg/kg	Aquatics
	Surface waters	0.014 mg/L <sup>d</sup>	0.038 mg/L <sup>e</sup>	IWQS <sup>f</sup>	0.014 mg/L <sup>d</sup>	0.086 mg/L <sup>e</sup>	IWQS <sup>f</sup>	Aquatics
Big Deer Creek	In-stream sediments	35 mg/kg	80 mg/kg	149 mg/kg	35 mg/kg	80 mg/kg	149 mg/kg	Aquatics
	Surface waters	0.014 mg/L <sup>d</sup>	0.038 mg/L <sup>e</sup>	IWQS <sup>f</sup>	0.014 mg/L <sup>d</sup>	0.086 mg/L <sup>e</sup>	IWQS <sup>f</sup>	Aquatics

<sup>a</sup>Concentrations of this contaminant in this media do not exceed risk-based levels, therefore a cleanup level has not been established.

<sup>b</sup>See narrative goals in Section 8.3.3 of the 2003 ROD

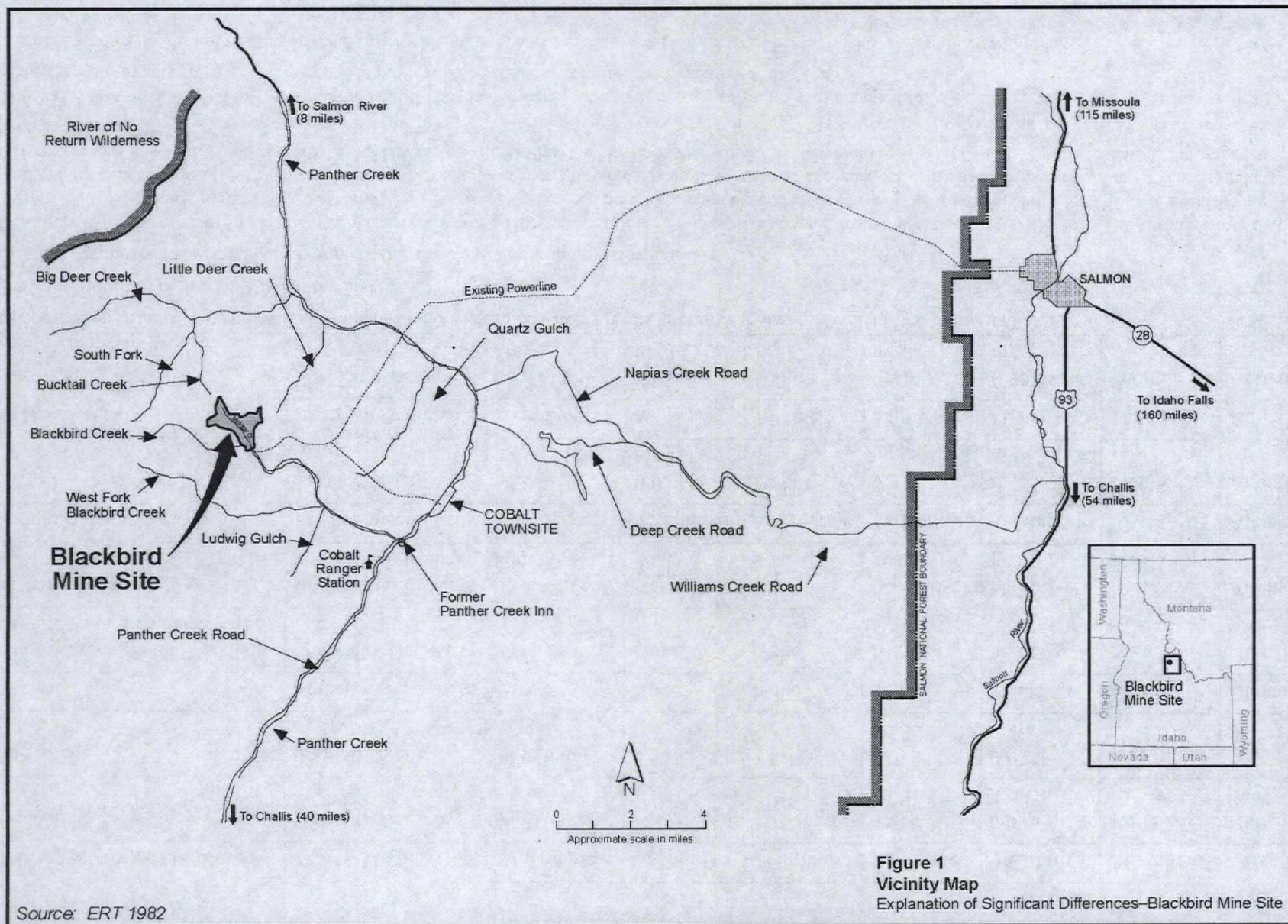
<sup>c</sup>Includes sediments below the high water mark that are exposed during low flow periods.

<sup>d</sup>In March 2010, the State of Idaho changed its surface water quality cleanup level for dissolved arsenic from 0.050 mg/l to 0.010 mg/L. The surface water quality cleanup level established in the 2003 ROD was 0.014 mg/L total arsenic. There have been exceedances of the ROD's total arsenic cleanup level of 0.014 mg/L in Panther Creek during high flow events in Blackbird Creek. However, there have been no measured exceedances of Idaho's revised dissolved arsenic standard of 0.010 mg/L in South Fork Big Deer Creek, Big Deer Creek or Panther Creek. Therefore, the ROD's cleanup level of 0.014 mg/L total arsenic is the standard listed in this table.

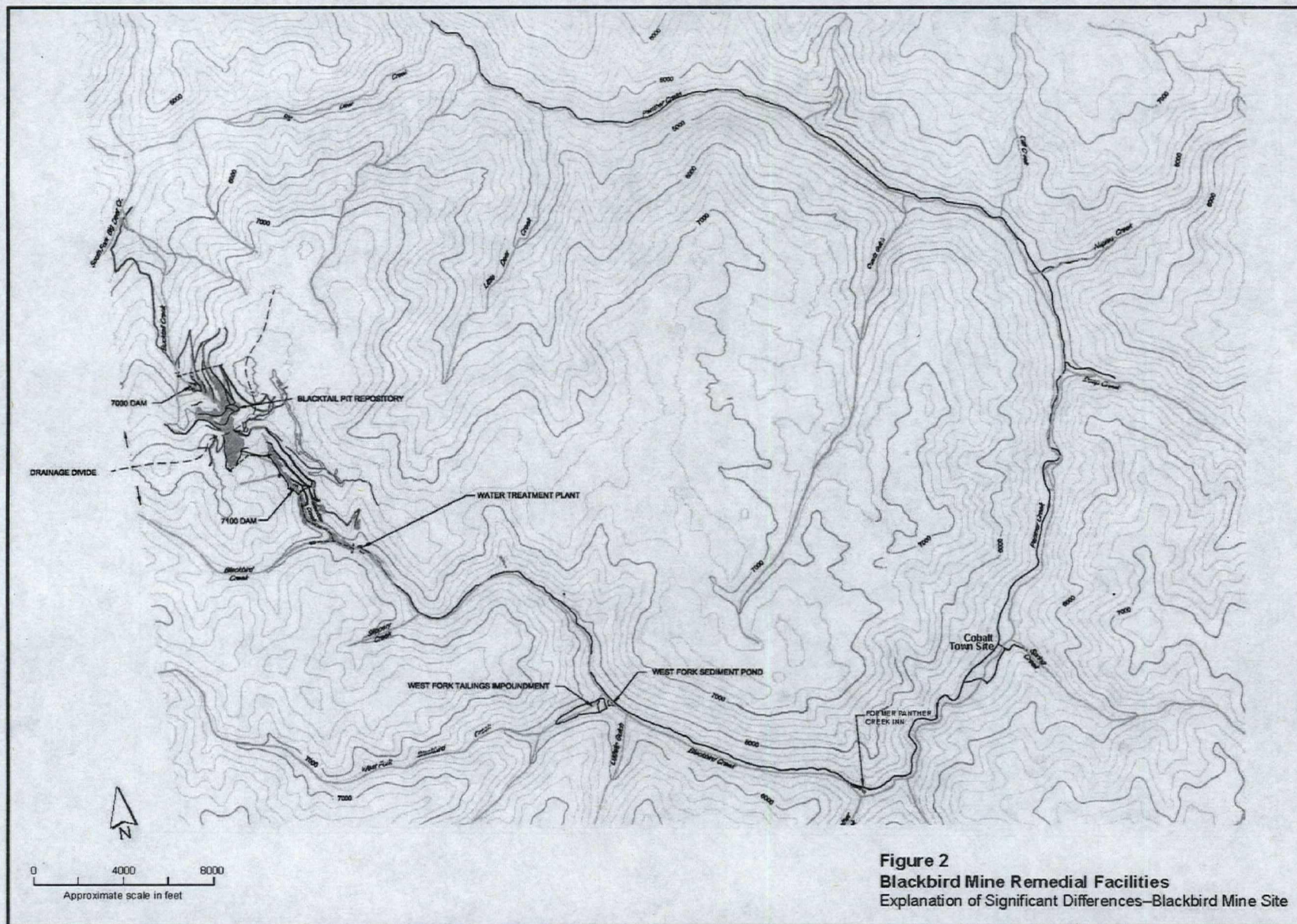
<sup>e</sup>This value was set at 0.038 mg/L in the 2003 ROD. The cleanup level for cobalt in surface waters was changed to 0.086 mg/L in the 2007 ESD, based on site-specific cobalt toxicity testing. The cobalt cleanup level for surface waters does not change for this ESD.

<sup>f</sup>The equation for the dissolved copper water quality cleanup level is based on total hardness and is the Idaho Water Quality Standard.



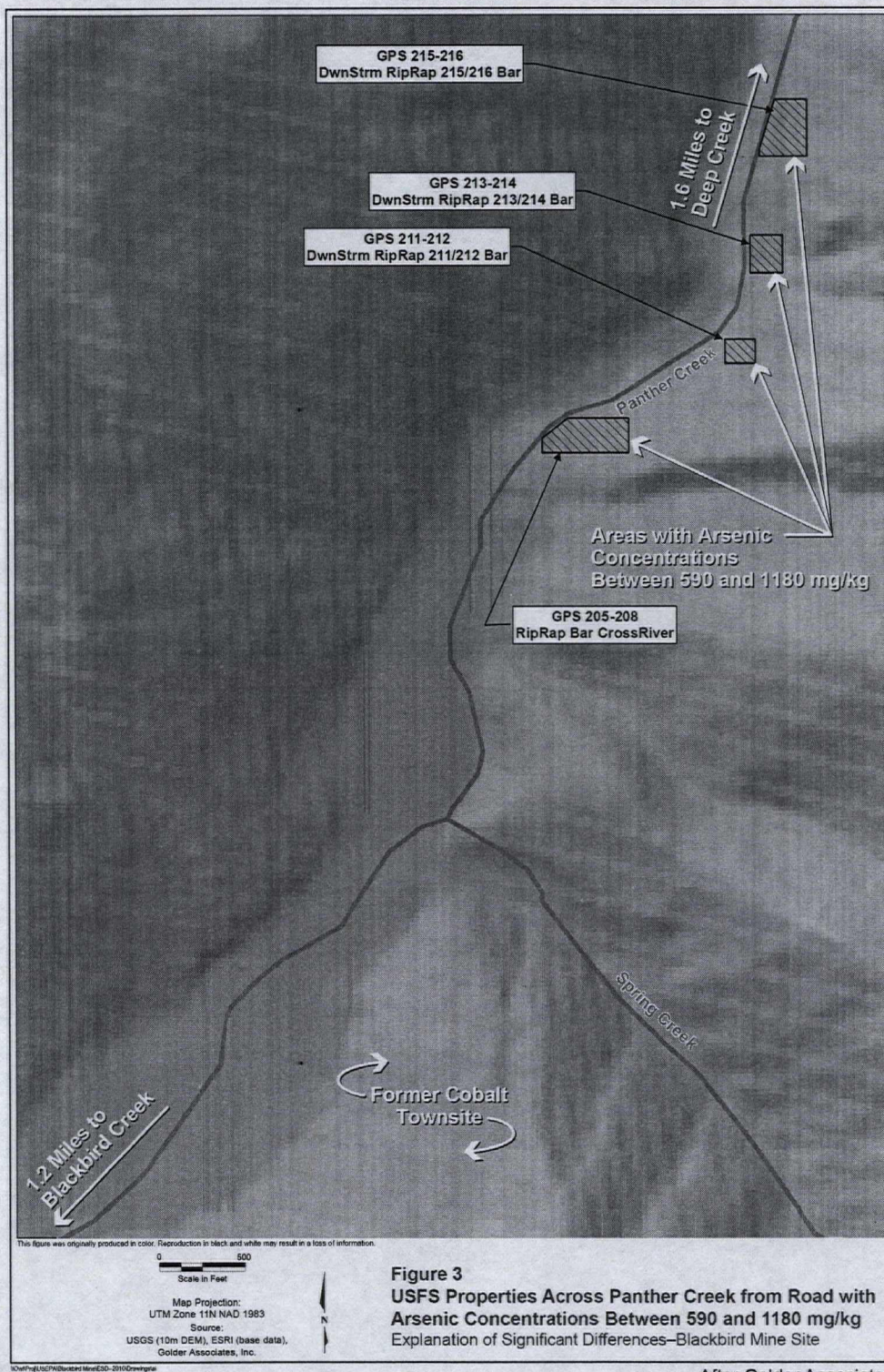






**Figure 2**  
**Blackbird Mine Remedial Facilities**  
 Explanation of Significant Differences—Blackbird Mine Site





After Golder Associates



# **Attachment**

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## **Responsiveness Summary**

# Responsiveness Summary for Blackbird Mine ESD

This Responsiveness Summary addresses comments received from the public on the draft of the Explanation of Significant Differences (ESD) for the Record of Decision (ROD) for the Blackbird Mine, dated July 2011. The public comment period was held from July 15, 2011 to September 19, 2011.

## Overview

The U.S. Environmental Protection Agency (EPA) issued a draft ESD to the 2003 ROD for the Blackbird Mine site proposing three categories of changes to the 2003 ROD. These include:

- A diversion structure on Blackbird Creek to divert Blackbird Creek waters into settling basins to reduce the risk of downstream deposition of contaminated sediments at overbank and in-stream areas along Panther Creek.
- Changes to the cleanup levels for cobalt in soils and groundwater required by revised toxicity values for cobalt.
- Changes to the cleanup levels for arsenic in soils at some of the U.S. Forest Service properties along Panther Creek due to changes in the accessibility and use assumptions.

The EPA received 16 written comments on the draft ESD during the public comment period. The comments were provided by the Blackbird Mine Site Group (BMSG), four resource agencies, and 11 members of the general public. The comments and EPA's responses are provided below. In some cases, portions of the public comments have been consolidated or edited for clarity. Complete copies of the public comments can be found at the information repository at the Salmon Public Library or at the EPA offices in Boise.

## Comments from Blackbird Mine Site Group (BMSG)

**BMSG Comment 1:** *New information, changed circumstances, and additional detailed evaluations warrant EPA's reconsideration of the actions to control Blackbird Creek sediments. The Supplemental Blackbird Creek Evaluation Report (SBCER) recommends a new alternative (Alternative F) which would include the instream stabilization and removals for controlling Blackbird Creek sediments with water treatment for West Fork seepage to control the ongoing source of iron floe. Alternative F is preferred for the following reasons:*

- *It is highly effective in reducing transport of arsenic and cobalt;*
- *It controls contaminants in sediments with in-stream stabilization;*
- *It provides a solution that does not require diversion of the entire flow of Blackbird Creek into settling basins, prior to release to Panther Creek, thus avoiding the impacts to ESA listed bull trout that would be caused by Alternative C;*
- *It targets contaminants contained in West Fork seepage at the source rather than relying on capture in settling basins and is more efficient at treating floe; and*
- *It will result in a natural-colored Blackbird Creek and eliminate the need for two large orange-colored settling basins at the confluence of Blackbird and Panther Creek.*

*In contrast, the evaluations in the Supplemental BCER confirm that the greatest benefit of the settling basins for controlling in-stream sediments would have occurred during the first year after completion of the in-stream stabilization and removal actions and to a lesser extent for the next few years thereafter. After this winnowing period, the primary benefit of the basins would be to capture the smaller, but continuing source of contaminants from iron oxyhydroxides (floe). However, this would require that the*

*diversion structure and settling basins become permanent fixtures that would obstruct the natural flow path of Blackbird Creek in perpetuity and would remain highly visible engineered structures in an area of the Salmon-Challis National Forest that otherwise has only modest development. Moreover, it would not capture the iron floe at the source.*

**Response 1:** EPA has reviewed the information contained in the Supplemental Blackbird Creek Evaluation Report (SBCER) produced by the commenter. Based in part on information contained in the SBCER, plus consideration of agency and public input, EPA has decided to defer the decision regarding the need for the Blackbird Creek diversion and settling basins. However, there is considerable uncertainty regarding the information presented in the SBCER, including: the amount of readily mobilized residual contamination along Blackbird Creek, the time required to winnow out the remaining contamination, and the overall effectiveness of the stabilization measures, especially under larger flow events. To reduce the uncertainties and unknowns, a program to monitor sediments along Blackbird Creek has been initiated. The details of this monitoring program are provided in a document titled *Sampling and Analysis Plan for Fall 2011 Blackbird Creek Evaluation*, prepared for the BMSG by Colder Associates, November 9, 2011. This Sampling and Analysis Plan is in the Administrative Record.

EPA will continue to evaluate the need for treatment of the oxyhydroxide floes generated at the West Fork Tailings Impoundment. If EPA determines that treatment is necessary, a separate decision document will be prepared to address treatment.

**BMSG Comment 2: Blackbird Creek Diversion and Settling Basins.** *All portions of the Draft Explanation of Significant Differences (ESD) concerning the EPA's proposed Blackbird Creek Diversion and Settling Basins should be removed. Colder Associates' Supplemental Blackbird Creek Evaluation Report (SBCER) performs a re-evaluation of the performance of the in-stream stabilization and removal actions already installed, the Blackbird Creek diversion and settling basins, and a new alternative for treatment of West Fork groundwater and seepage. The SBCER results in recommendation of treatment to remove the source of iron floe in addition to the already completed stabilization and removal actions. The draft ESD incorrectly states that the diversion and settling basin action "utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable" as required by CERCLA Section 121. The diversion and settling basins are neither permanent as described in EPA's Biological Assessment (BA) nor does it incorporate treatment for the continuing source of iron floe. On the other hand, the alternative recommended in the SBCER is a permanent remedy, it utilizes treatment to the maximum extent practicable, and it has other significant advantages over the diversion and settling basins.*

**Response 2:** As noted in EPA's response to the BMSG's Comment 1 above, EPA has decided to defer the decision regarding the need for the Blackbird Creek diversion and settling basins for a minimum of two years while additional data are collected. Therefore, the Blackbird Creek diversion and settling basins will not be part of this ESD. If the decision is made in the future to implement the Blackbird Creek diversion and settling basins, EPA will prepare a new decision document and re-initiate Endangered Species Act (ESA) consultation with the resource agencies. Similarly, if EPA determines that treatment is necessary at the West Fork, a decision document will be issued to cover that action.

**BMSG Comment 3: Additions/Changes to Cobalt Cleanup Levels.** *The ESD includes new cleanup levels for soils and groundwater which are based on EPA's Provisional Peer Reviewed Toxicity Values (PPRTV) for Cobalt, dated August 25, 2008. The BMSG has previously commented that the reference dose (RfD) in the PPRTV document is unrealistically low because 1) the RfD is within the range of typical dietary exposures to cobalt and dietary exposures are not addressed in the document, 2) the RfD should not be based on thyroid dysfunction, which was incorrectly derived from questionable case*

*studies from the 1950s, and 3) the bioavailability of cobalt in soils is expected to be lower than cobalt chloride used in the studies. Therefore, the BMSG does not agree with the cobalt cleanup levels derived for soils and groundwater. Moreover, the ESD and EPA's October 12, 2009, preliminary remediation goals (PRG) memorandum do not contain the equations used to derive the cleanup levels, therefore, the BMSG was not able to check calculations for accuracy.*

Response 3: EPA recognizes that the BMSG submitted comments on June 16, 2009 to EPA's National Center for Environmental Assessment (NCEA) on the EPA 2008 PPRTV for cobalt. EPA provided responses to the BMSG comments in a memorandum from Jason C. Lambert, PhD, DABT dated June 19, 2009. Based on those responses, EPA continues to use the 2008 PPRTV for cobalt to develop cleanup levels for the Blackbird Mine Site. The equations used to derive the revised cleanup levels were the same as the equations used in EPA's previous PRG memos that the BMSG has reviewed, which are a part of the Administrative Record.

**BMSG Comment 4: *Change in Recreational Cleanup Levels.*** *The BMSG believes EPA correctly re-evaluated the cleanup level for Panther Creek overbank areas on the opposite bank from the Panther Creek Road based on a more realistic reduced, but still extremely conservative, exposure frequency assumption. Based on the lack of observed human use of the overbank across from the Blackbird Creek road, a 7 day per year exposure frequency is still overly conservative for these areas and would also be conservative if applied to the overbank areas on the road side of Panther Creek where EPA inappropriately retained the assumed 14 day per year exposure frequency assumption. Cleanup levels continue to fail to address the numerous comments raised by the BMSG during EPA's risk assessment calculations and development of the cleanup levels in the ROD. The risk assessments and cleanup levels remain overly conservative and unreasonable given the data. The BMSG's comments included, but were not limited to 1) use of an unrealistically high bioavailability factor that fails to use site-specific data, 2) inappropriate use of a chronic reference dose for calculating a subchronic RfD, 3) unrealistic application of recreational and residential use assumptions to individual overbank areas that represent a small portion of an exposure area.*

Response 4: The BMSG provided similar comments on the risk assessment assumptions in the context of the 2003 Record of Decision (ROD) for the Blackbird Mine Superfund Site. Appendix D of the ROD, Part III: Responsiveness Summary, provides responses to the issues listed in BMSG's comment 4 above. Specifically, refer to Response 47 in Appendix D for a response to the bioavailability issue, Response 49 in Appendix D for a response to the subchronic reference dose issue, and Response 46 in Appendix D for a response to the exposure area issue.

As noted in Response 46 in Appendix D, EPA guidance requires that risk assessments evaluate potential risks under reasonable maximum exposure conditions. Because data were not available to document actual use of the overbank areas near Panther Creek Road, assumptions were made to estimate reasonable maximum exposure and these assumptions were used in estimating potential risks and developing cleanup levels.

**BMSG Comment 5:** *The BMSG reserves its right to comment further. We understand that NOAA has not yet issued its Biological Opinion concerning the diversion and settling basins, and we would like to review and have an opportunity to submit comments relating to that document. We also request an opportunity to comment on other documents relating to the ESD, not previously provided, that EPA may rely on in making its decision.*

Response 5: A Biological Opinion was not issued by NOAA and, due to EPA's decision to defer the diversion and settling basins, formal consultation with NOAA has ended. Because EPA is deferring the decision on the settling basins no additional documentation have been added to the record regarding ESA consultation.

**BMSG Comment 6:** *(BMSG consulted with the Panther Creek property owners about the stabilization and removal work to control sediments out of Blackbird Creek and the EPA's proposed settling basins at the confluence of Blackbird Creek and Panther Creek. We discussed the benefits of monitoring the work in Blackbird Creek to sufficiently reduce the transport of contaminated sediments into Panther Creek and are not opposed to deferring construction of settling basins during that time. The landowners expressed their concerns over the visual impacts of the basins along Panther Creek road and their desire to see the orange-colored floe in Blackbird Creek addressed.*

**Response 6:** EPA is aware that the BMSG consulted with some of the property owners along Panther Creek. The property owners provided comments to EPA during the public comment period. The property owners' comments and EPA's responses to those comments are provided below.

**Comments from Blackbird Mine Natural Resource Trustee Council (TC)**

**TC Comment 1:** *The initial analysis of sediment control alternatives indicated that contaminated fine grained sediments within the Blackbird Creek channel would be stabilized in place or removed through in-stream stabilization of sediments. It was assumed that some migration of sediments would continue to occur during the first several years (approximately six) as the fine grained sediments are winnowed from the channel surface and an armor layer develops. The Supplemental BCER states that the high snowmelt in 2011, and subsequent high flows, showed that instream stabilization structures are effective, and that the first flush of sediments out of the stabilization areas has begun to develop an armor layer that will prevent migration of deeper contaminated sediments.*

**Response 1:** EPA agrees that the BMSG's analysis indicates that the removals and in-stream stabilization measures implemented in 2010 and 2011 along Blackbird Creek will likely be effective in the long term at reducing the risks of downstream recontamination along Panther Creek at residential and recreational properties. However, there is considerable uncertainty regarding how long it will take for the stabilization measures to become fully effective at protecting human health. The estimate of six years for the winnowing process is a very rough estimate. The actual rate of winnowing will be a function of the magnitude and timing of future high flow events along Blackbird Creek; therefore the time until full effectiveness is achieved may be significantly different than the six years estimated in the Blackbird Creek Evaluation Report (BCER) and the SBCER. To reduce the level of uncertainty, a monitoring program of the sediments along Blackbird Creek has been undertaken. The first samples were collected during the fall of 2011. Additional samples will be collected during subsequent years to better refine the calculations and estimates in the BCER and SBCER.

**TC Comment 2:** *The diversion and settling basin (Alternative C) was developed originally to capture contaminated sediment until stabilization structures become fully effective, and to (permanently) capture the floe contributed from seepage from the West Fork tailings dam. While there are no data with which to evaluate the effects of the 2011 runoff on removal of contaminated sediments from Blackbird Creek, it would appear that the high flow event may have resulted in channel stabilization occurring more rapidly than predicted. If this is the case, then the shift in the proportion of floc (from West Fork Blackbird Creek) relative to contaminated sediments, with floc becoming the primary contributor to arsenic that impacts downstream resources, may also be occurring more rapidly than expected.*

**Response 2:** A program to monitor the sediments along Blackbird Creek to determine the effectiveness of the Blackbird Creek stabilization measures began in the fall of 2011. This monitoring program will also be used to measure the potential for recontamination of the Blackbird Creek sediments with arsenic from the oxyhydroxide floes released from the West Fork Tailings Impoundment. This monitoring will be used to help evaluate the extent and rate of recontamination of the Blackbird Creek sediments from the oxyhydroxide floes.

**TC Comment 3:** *Alternative F, which combines instream stabilization (existing) and collection and treatment of West Fork seepage at the source, appears to be a more viable alternative than construction of a diversion and settling ponds at the mouth of Blackbird Creek. It would eliminate concerns regarding encroachment into the Panther Creek floodplain, potential impacts on the Panther Creek channel, and potential disruption of the upstream migration of adult Chinook salmon. The majority of spawning habitat for Chinook salmon exists above the confluence of Blackbird and Panther Creeks, and upstream migration occurs during the projected construction window. In addition, Alternative F would allow natural recovery of aquatic habitat to occur in Blackbird Creek*

**Response 3:** As noted in response to TC Comment 1 above, there is considerable uncertainty regarding how long it will take for the stabilization measures to become fully effective. The stabilization structures will only address the sediments within Blackbird Creek. EPA will continue to evaluate the need for treatment of the oxyhydroxide flocs generated at the West Fork Tailings Impoundment. If EPA determines that treatment is necessary, a separate decision document will be prepared to address treatment.

**TC Comment 4:** *It is unlikely that any construction will occur in 2011. We encourage additional data collection and observations as to the effect of the 2011 flows in removing contaminated sediments, and an evaluation of success of the instream structures in stabilizing the Blackbird Creek channel. This could provide the information necessary for a reasoned selection of the most appropriate alternative for the long-term protection of human health and the environment in the Panther Creek watershed.*

**Response 4:** EPA agrees with this comment. A portion of the monitoring program along Blackbird Creek includes geomorphological evaluations of the stabilization structures. This monitoring also includes sampling of the sediments between the stabilization structures to determine the rate of change in the concentrations of the arsenic and cobalt within these sediments. The Blackbird Creek monitoring will be used to refine the estimates of the overall effectiveness of the stabilization measures.

#### **Comments from Idaho Department of Environmental Quality (DEQ)**

**IDEQ Comment:** *The Idaho Department of Environmental Quality reviewed the information provided by the U.S. Environmental Protection Agency (EPA) during the public comment period concerning the proposed changes to the Blackbird Mine Superfund cleanup. The proposed changes were described in the Blackbird Creek Evaluation Report to Address Migration of Blackbird Sediments (BCER). EPA, in a May 12, 2011 correspondence, requested a letter of concurrence for the proposed Explanation of Significant Differences (ESD) from DEQ. DEQ replied with a June 22, 2011 concurrence letter; citing the need to protect human health from arsenic contaminated floodplain materials, deposited during bankfull run-off events. Specifically, DEQ supported EPA's preferred alternative to construct in-stream structures in sections of Blackbird Creek and to divert Blackbird Creek into settling ponds which would trap contaminated sediments. Lastly, DEQ requested the investigation and potential removal of both the ponds and diversion on Blackbird Creek when they were no longer required as part of the long-term remedy at the site. After submittal of the ESD concurrence letter, on July 19, 2011 DEQ received additional information from EPA, a package entitled, "Supplemental Blackbird Creek Evaluation Report to Address Migration of Blackbird Creek Sediments" (SBCER) and a request to provide comment.*

*The SBCER, contains the original alternatives and also proposed an additional alternative. In light of the information contained in the SBCER, DEQ requests EPA consider this additional alternative. Specifically, Alternative F, in-stream structures and long-term water treatment of contaminated West Fork Blackbird Creek waters, appears promising to protect both human health from arsenic risk and not significantly alter the area as dramatically as the diversion and pond system would. DEQ will continue supporting any alternative which protects public health. After our review, DEQ believes Alternatives C*

*and F are equally promising to accomplish EPA's goal. However, DEQ also believes Alternative F may result in less overall disturbance of lower Blackbird and Panther Creek. DEQ encourages EPA to further evaluate the alternatives and select a long-term remedy which may accomplish human risk, habitat, water quality, and fisheries goals.*

Response: Based in part on information contained in the SBCER, plus consideration of agency and public input, EPA has decided to defer the decision regarding the need for the Blackbird Creek diversion and settling basins. However, there is considerable uncertainty regarding the information presented in the SBCER, including: the amount of readily mobilized residual contamination along Blackbird Creek, the time required to winnow out the remaining contamination, and the overall effectiveness of the stabilization measures, especially under larger flow events. To reduce the uncertainties and unknowns, a program to monitor sediments along Blackbird Creek has been undertaken. EPA will continue to evaluate the need for treatment of the oxyhydroxide floes generated at the West Fork Tailings Impoundment. If EPA determines that treatment is necessary, a separate decision document will be prepared to address treatment.

#### Comments from U.S. Forest Service (USFS)

**USFS Comment 1:** *This letter is in response to the Explanation of Significant Differences for the Record of Decision for the Blackbird Mine (ESD). In light of the new information that has been detailed in the Supplemental Blackbird Creek Evaluation Report to Address Migration of Blackbird Creek Sediments (SBCER) prepared by Colder Associates (July 8, 2011), the Forest Service requests the EPA defer finalization of the ESD until the new information has been fully evaluated.*

Response 1: Based in part on information contained in the SBCER plus consideration of agency and public input, EPA has decided to defer the decision regarding the need for the Blackbird Creek diversion and settling basins pending collection of additional information regarding the effectiveness of the in-stream stabilization measures along Blackbird Creek. To reduce the uncertainties and unknowns, a monitoring program along Blackbird Creek and Panther Creek will be undertaken for at least two years. However there are two other important elements to the ESD—the revised cleanup levels for cobalt in soils and groundwater, and the revised cleanup levels for arsenic and cobalt at certain of the USFS overbank areas across Panther Creek from the Panther Creek road. These other two elements are important revisions to the 2003 ROD; therefore EPA plans to issue the ESD to incorporate those two elements, while deferring the decision regarding construction of the diversion structure and settling basins.

**USFS Comment 2:** *Based on the information presented in the Supplemental BCER the Forest Service supports Alternative F (Instream Stabilization with Water Treatment). This new alternative appears to be equally as effective as Alternative C (Instream Stabilization with Diversion and Settling Basins) in reducing the migration of contaminated sediments out of Blackbird Creek. In addition, Alternative F does not have the adverse impacts that would occur with Alternative C. Alternative F would eliminate Forest Service concerns regarding encroachment on the Panther Creek channel and filling of the floodplain adjacent to Panther Creek. It would eliminate the adverse visual impacts in an area that the Salmon Forest Plan has determined to have a high level of visual sensitivity. Alternative F would avoid the potential disruption of the upstream migration of adult Chinook salmon in Panther Creek and it would allow for the natural recovery of aquatic habitat in Blackbird Creek.*

Response 2: EPA does not agree with the conclusion of the SBCER that Alternative F would be equally as effective as Alternative C at reducing the migration of contaminated sediments from Blackbird Creek that result in downstream contamination along Panther Creek. During the period that the remaining fine-grained sediments are being winnowed out from the Blackbird Creek sediments, there is a risk of recontamination of overbank and in-stream sediments along Panther Creek. Because the settling basins

would capture most of these contaminated sediments up to a 25-year storm event on Blackbird Creek, the settling basins would provide greater protectiveness during the period until the stabilization structures become fully effective. EPA is sensitive to the concerns of the Forest Service regarding impacts of construction of the diversion structure and settling basins. If EPA decides in the future that the settling basins are necessary to protect human health and the environment, EPA will consult with the Forest Service and all other stakeholders in the process of documenting and selecting any future actions in an appropriate decision document at that time.

**USFS Comment 3:** *The Supplemental BCER includes an analysis of the remaining contaminants in the Blackbird Creek drainage and concludes that any remedy would need to be permanent to be fully effective. Prior to this evaluation the Forest Service was under the assumption that the diversion structure and settling basins in Alternative C would be temporary and would be removed in the future. If these structures need to be permanent the adverse impacts associated with Alternative C would also be permanent.*

**Response 3:** The diversion structure and settling basins have never been planned to be permanent structures. In fact, as described in the Biological Assessment (CH2M HILL, 2011), the need for the diversion structure and settling basins would be evaluated at approximately ten years after construction. If it was determined at that time that the settling basins were no longer needed to address residual contamination along Blackbird Creek, they would be removed and the disturbed areas reclaimed.

#### Comments by Idaho Department of Fish and Game (IDFG)

**IDFG Comment 1:** *The Idaho Department of Fish and Game (IDFG) is concerned regarding the impacts of the proposed sediment control basins near the mouth of Blackbird Creek at the former Panther Creek Inn property. IDFG supports the control of these contaminated sediments; however, depending on how the ponds are managed, we believe that this proposed remedial action could cause unwanted negative impacts to the water quality in mainstem Panther Creek. If water from Blackbird Creek is diverted through the ponds throughout the year, there is the possibility that during summer months water discharge temperatures from the pond series into Panther Creek could be elevated and cause changes to the baseline temperatures within Panther Creek.*

**Response 1:** To evaluate potential changes in the water temperatures in Panther Creek as a result of the settling basins, the BMSG conducted temperature modeling in Blackbird and Panther Creeks. Colder Associates prepared the temperature modeling for the BMSG using the U.S. Geological Survey's SSTEMP modeling tool. The SSTEMP is a one-dimensional model that estimates daily average and maximum temperatures in stream segments using heat transfer equations for convection, conduction, and radiation, customized for latitude and elevation. The results of the temperature modeling are included in Appendix B of the *Biological Assessment—Blackbird Creek Diversion and Settling Basins at the Blackbird Mine*, prepared for EPA by CH2M Hill, February 11, 2011. The modeling was conducted for the typical worst case scenario of low flows (lowest flows during a seven day period once every 10 years or "7Q10") in Blackbird Creek and Panther Creek for July, August, and September. The modeling indicated that the settling basins could result in an increase in maximum average daily temperatures in Panther Creek downstream from the settling basins of 0.28, 0.17, and 0.22 degrees C, respectively for July, August, and September during 7Q10 low flows. The maximum predicted average daily temperature increase of 0.28 degrees C is within the State of Idaho's standard for allowable temperature increases of 0.30 degrees C. Interestingly, although the maximum daily average temperatures in Panther Creek were predicted to increase, the maximum daily peak temperatures in Panther Creek were predicted to decrease. This is because the settling basins would tend to dampen out the typical diurnal temperature variations in Blackbird Creek. The decrease in the maximum daily peak temperatures in Panther Creek assuming the settling basins were in place was predicted to be 0.35, 0.45,



and 0.49 degrees C, respectively for July, August, and September. To put these changes into perspective, the current diurnal variation in Panther Creek waters downstream from Blackbird Creek is about 5 to 7 degrees C each day during the summer months.

**IDFG Comment 2:** *IDFG is not opposed to the seasonal diversion of water through the pond complex (seasonal high water events) to capture and retain sediments however, during summer months (July-September) we recommend that Blackbird Creek be allowed to flow naturally down the existing Blackbird Creek channel. In 2010, IDFG documented Chinook salmon spawning areas (redds) immediately downstream of the project area. If Chinook continue to spawn in this location, embryos could possibly be impacted by the proposed project if temperatures in Panther Creek increase as a result of the pond series.*

**Response 2:** During preparation of the BCER, consideration was given to the potential for bypassing Blackbird Creek waters past the Blackbird Creek diversion structure to avoid year-round dewatering of the 570 lineal feet of the Blackbird Creek channel downstream from the diversion structure. This could be accomplished through automation of a bypass sluice gate within the diversion structure. The sluice gate would remain open during most low-flow periods, bypassing Blackbird Creek flows into the Blackbird Creek channel downstream from the diversion structure. The bypass sluice gate would be closed only during spring runoff, or during a rapid rise in Blackbird Creek flows as a result of a large thunderstorm. EPA decided against this concept because it would result in rapid flow variations during operation of the sluice gate, with the potential to strand fish in the Blackbird Creek channel when the gate had to be closed. EPA determined that it would be better to lose the 570 feet of low-quality Blackbird Creek habitat than to risk the potential for stranding (and potentially harming or killing) Chinook salmon, Bull trout, and other fish that happened to be in the bypass reach when the flows in Blackbird Creek had to be shut off.

**IDFG Comment 3:** *In addition to the potential impacts to Chinook salmon, in 2010 a number of large bull trout were detected below the West Fork of Blackbird Creek that quite possibly migrated into Blackbird Creek from mainstem Panther Creek. Bull trout are very sensitive to elevated temperature regimes and if the pond series changes the temperature patterns in Blackbird Creek these migratory fish could be precluded from expressing this life history strategy.*

**Response 3:** It is unknown whether the Bull trout encountered in the short reach of the West Fork Blackbird Creek downstream from the West Fork spillway came upstream from Panther Creek or downstream from the West Fork Blackbird Creek above the Tailings Impoundment. Regardless, the settling basins would be located near the mouth of Blackbird Creek and the flows at the diversion structure would be routed into the settling basins at that point. The outflows from the basins would be discharged into Panther Creek and would not be re-introduced into Blackbird Creek. Therefore, based on existing information, if the settling basins are constructed in the future they would have no impact on the temperatures in Blackbird Creek.

**IDFG Comment 4:** *We are also concerned about the stored sediment in the ponds. How will these sediments be removed and disposed of? What stopgaps are in place to make sure that the sediments are not mobilized into Panther Creek during removal or refilling the ponds?*

**Response 4:** One of the reasons for considering two settling basins was to allow continued operation of one of the basins if the other basin requires sediment removal or other periodic maintenance. If the settling basins are constructed in the future and based on existing information, the distribution scheme for inflows into both basins would be designed such that all flows could be shunted to either basin. Sediments would only be removed during low flow periods when flows would be shut off to one of the basins and all flows shunted to the other basin. Thus, there would be no releases of sediments to Panther Creek during periodic removal of sediments. The removed sediments would be transported to the West

Fork Tailings Impoundment to be disposed of on top of the existing tailings and other contaminated materials that have been previously disposed of at that location.

**IDFG Comment 5:** *Our last concern is related to the entrainment of fish into the ponds while the ponds are in operation. Upon draining fish could be stranded in the ponds and would require removal/salvage. What strategies will be employed to mobilize and safely salvage fish?*

**Response 5:** If the settling basins are constructed in the future and based on existing information, fish shocking and salvage operations would be conducted in each basin to remove entrained fish prior to any dewatering required for sediment removal or other maintenance. The salvaged fish would be transported either to the West Fork Blackbird Creek upstream from the Impoundment or to Panther Creek upstream from Blackbird Creek, based upon consultations with IDFG.

#### Comments from the General Public

**Public Comment 1:** *One commentor indicated that the alternative to install a diversion from Blackbird Creek and construct two settling basins at the former Panther Creek Inn (PCI) Property was a concern. The commentor indicated that the ponds would be unattractive and preferred that the ponds be out of site, perhaps further up Blackbird Creek off the heavily traveled Panther Creek road where they would not be viewed by the public any more than necessary.*

**Response 1:** One of the primary reasons for locating the proposed settling basins at the former PCI property was the large area of fairly flat ground available at that location. Upstream from Panther Creek, Blackbird Creek flows through a steeply incised canyon and there is not sufficient flat ground available for appropriately sized settling basins. The BCER did evaluate alternatives with settling facilities located along Blackbird Creek upstream from Panther Creek. However, because of the steep and narrow canyon, the settling facilities would have to be dams across Blackbird Creek. The evaluations in the BCER indicated that dams on Blackbird Creek would be significantly more costly, have greater environment impacts, and would be less effective than settling basins located at the former PCI property.

**Public Comment 2:** *One commentor indicated that it was their understanding that the Blackbird Mine was to be opening sometime during 2011. The commentor was concerned that the revised cleanup plan meant that it would be a long, drawn out affair to delay the opening of the mine due to these "significant differences".*

**Response 2:** There is an apparent misunderstanding by the commentor. The Blackbird Mine is an inactive mine being cleaned up by the BMSG with oversight by EPA, in consultation with the U.S. Forest Service, the State of Idaho and the National Oceanographic and Atmospheric Administration. The Idaho Cobalt Project is a new mine being developed by Formation Capital Corporation with oversight by the U.S. Forest Service. The Idaho Cobalt Project is within and adjacent to the Blackbird Mine site, but is not directly related to the Blackbird Mine site cleanup, nor is the Idaho Cobalt Project the subject of this ESD. Therefore, the ESD will have no effect on the timing for opening of the Idaho Cobalt Project.

**Public Comment 3:** *Several commentors indicated that they believe it is reasonable to monitor the measures that were completed in 2009 and 2010 to control sediments from Blackbird Creek to determine if those measures are functioning properly. The idea of building settling basins adjacent to Panther Creek should be considered only after the measures to control Blackbird Creek have been monitored to determine their effectiveness. If the ponds do not need to be built, that would be best because there will be very significant visual impacts from the ponds. Long term, the orange-colored materials should be eliminated from Blackbird Creek. If additional cleanups need to be conducted along Panther Creek, the commentors would prefer to wait to see whether the Blackbird Creek removal and*

*stabilization work has been successful such that the number of times that cleanups would be conducted would be minimized.*

**Response 3:** EPA has decided to defer its decision on the Blackbird Creek diversion structure and settling basins to allow for collection of additional information regarding the effectiveness of the in-stream stabilization measures along Blackbird Creek. A monitoring program along Blackbird Creek began in the fall of 2011 to determine the effectiveness of the stabilization structures and to refine the estimates of the amount of time required to winnow out the remaining contamination associated with Blackbird Creek sediments. In addition, EPA will continue to evaluate the need for treatment of the orange-colored oxyhydroxide floes generated at the West Fork Tailings Impoundment. If EPA determines that treatment is necessary, a separate decision document will be prepared to address treatment. EPA is sensitive to the desire of property owners along Panther Creek to avoid repeated cleanups at their properties. In fact, that was one of the primary reasons for considering the settling basins—to protect public health and avoid the need for repeated cleanups along Panther Creek. If the settling basins are constructed in the future, there would be much lower risk of recontamination of Panther Creek properties from the Blackbird Creek contaminants while the stabilization measures become fully effective. EPA has consulted with, and will continue to consult with, the affected property owners along Panther Creek regarding the need for and the timing of future cleanups at their properties.

**Public Comment 4:** *One commentor was concerned that the construction of the settling basins would affect the public's ability to access Blackbird Creek and Ludwig Gulch.*

**Response 4:** EPA is deferring its decision on the diversion structure and settling basins. However, if construction would have been initiated, the Blackbird Creek road would have to be re-graded and re-located slightly in the vicinity of the Blackbird Creek diversion structure to accommodate the diversion dam and the diversion structure. This would affect approximately 760 lineal feet of the existing Blackbird Creek road. The construction of the road re-grading and re-location would be scheduled to minimize impacts to traffic along Blackbird Creek and temporary detours would be constructed as needed to maintain traffic along Blackbird Creek road. There would need to be occasional closures of the Blackbird Creek road for an hour or two to accommodate certain of the construction activities. EPA would work with the U.S. Forest Service regarding temporary detours and the required road closures to provide notifications to the public and to minimize impacts to traffic on the Blackbird Creek road.

**Public Comment 5:** *One commentor indicated that he had some of his property cleaned up in 2004 and that he had accepted institutional controls on the remainder of his property. The commentor preferred Alternative C, with the removal and in-stream stabilization along Blackbird Creek and the settling basins at the former PCI property.*

**Response 5:** Comment noted. Depending on the results of future monitoring and analysis, EPA may decide that the settling basins are required to reduce releases of contaminated sediments to Panther Creek or to otherwise to protect human health and the environment. In that event, EPA will notify local property owners of its decision and the basis for it.

**Public Comment 6:** *One commentor was concerned regarding whether EPA will make the final decision unilaterally or through a cooperative inter-agency task force. The commentor asked what weight will be given to those comments made by other agencies, and then the public, when a final decision is made. Is there a formal process for integrating these comments in final decision-making and if so, what is it? If not, how does the public ensure that proper consideration is given to agency and public input?*

**Response 6:** The Superfund law and the National Contingency Plan (NCP), which are the implementing regulations for the Superfund law, set out the public participation requirements for Superfund response

actions. EPA sought public comments on the proposed ESD, and we considered all the comments we received in making the final decision. As a result of that process, EPA has decided to defer a decision on the settling basins pending further monitoring and analysis. However, EPA will implement the new cobalt cleanup levels for soils and groundwater and the revised arsenic and cobalt soil cleanup levels for certain of the Forest Service properties along Panther Creek.

EPA, in consultation with the U.S. Forest Service, the State of Idaho, and the National Oceanic and Atmospheric Administration (the Natural Resource Trustees Council) makes remedy decisions regarding the Blackbird Mine cleanup. Given the significant natural resource issues at the Blackbird Mine site, EPA coordinates extensively with the Natural Resource Trustee agencies. However, under the Superfund law, EPA is given the final authority to make the final remedy decision.

*Public Comment 7: One commentor asked which agency was the decision-maker regarding the additional removals and stabilizations along Blackbird Creek, and whether the plans for the removals and stabilizations were reviewed for effectiveness before the BMSG was ordered to perform them? The stabilizations activities were constructed in 2009 and 2010; therefore the commentor indicated that, for the most part, the remedial construction is currently at its least-stable condition, and will become more stable over time. Considering that the stabilization activity is new and likely at its least stable, along with spring 2011 having been a high runoff year on Blackbird Creek, the commentor questioned whether the stabilization measures along Blackbird Creek worked as predicted? If so, the commentor asked why more mitigation work is required in the form of large settling basins.*

**Response 7:** EPA, in consultation with the U.S. Forest Service, the State of Idaho, and the National Oceanic and Atmospheric Administration (the Natural Resource Trustees Council) makes remedy decisions regarding the Blackbird Mine cleanup. The effectiveness of the Blackbird Creek removals and stabilization measures was evaluated in the BCER and the SBCER, and it was determined that these measures would likely be very effective in the long term. EPA agrees that the greatest risk of releases from the contaminated materials remaining along Blackbird Creek is during the first few years following completion of the removals and stabilization measures. This was one of the primary reasons for the proposal for construction of the settling basins—to reduce the risk from the releases until the stabilization measures become fully effective. A monitoring program along Blackbird Creek began in the fall of 2011 to determine the effectiveness of the stabilization structures and to refine the estimates of the amount of time required to winnow out the remaining contamination associated with Blackbird Creek sediments. This monitoring will continue until sufficient data are available for EPA to determine whether the stabilization measures function as predicted in the BCER and SBCER.

*Public Comment 8: One commentor questioned whether EPA has performed a scientifically and statistically-based risk-analysis to justify its decision, as it does with other costly remedial actions/activities. If so, what does this risk-analysis indicate as far as probability of recontamination using each of the alternatives, particularly now that the first and presumably worst year for winnowing out sediments has already passed? Additionally, the commentor believed that monitoring the impacts from the 2011 runoff event should have delivered a substantial degree of certainty, not the large degree of uncertainty that may have been present pre-construction. The commentor asked what factor of safety is determined as acceptable or unacceptable, who determines it, and what are the impacts from pond construction itself?*

**Response 8:** An extensive evaluation was conducted of the potential effectiveness (and therefore the risk of downstream recontamination) of the alternatives that were considered as part of the BCER. The commentor can review these effectiveness evaluations in Section 6 and Appendix D of the BCER. The effectiveness evaluations are further refined in the SBCER. However, the evaluation of effectiveness for the types of stabilization measures constructed along Blackbird Creek is an inexact science. The

effectiveness calculations presented in the BCER and SBCER necessarily required a number of assumptions and considerable engineering judgment regarding the input parameters used in the effectiveness equations. Therefore, a "factor of safety", per se, cannot be determined. To reduce the level of uncertainty associated with the effectiveness calculations, a monitoring program along Blackbird Creek began in the fall of 2011. This monitoring will be used to better refine the input parameters for the effectiveness evaluations. The impacts from construction of the diversion structure and settling basins were evaluated in Section 6 of the BCER.

**Public Comment 9:** *One commentor indicated that the SBCER discusses at length the sediment production and monitoring. The commentor believes that, when considering the length of time required to implement the remedial activities to date, utilizing a couple more years to evaluate the sediment conditions in Blackbird Creek subsequent to the 2010 removal and stabilization activities seems prudent. Evaluating the conditions for a period of time may shed significant new light on what future mitigation measures are warranted, including if existing alternatives are adequate.*

**Response 9:** EPA agrees with this and other public comments regarding the need to further evaluate the effectiveness of the stabilization measures before implementing any additional mitigation measures. Therefore, EPA has decided to defer a decision on the settling basins pending further monitoring along Blackbird Creek.

**Public Comment 10:** *One commentor indicated that the ponds in EPA's preferred alternative would require significant maintenance and operational activity. The commentor questioned whether the sustainability of the long-term operation and maintenance activities had been considered in the alternatives analysis that EPA used to select the preferred alternative.*

**Response 10:** All of the alternatives evaluated in the BCER and SBCER would require some operation and maintenance (O&M), including the stabilization measures already constructed along Blackbird Creek. The level of O&M and the estimated costs associated with the O&M were evaluated for each of the alternatives in the BCER and SBCER. It should be noted that the BMSG conducts regular ongoing O&M for all of the remedial facilities constructed at the Blackbird Mine. The amount of O&M associated with any of the alternatives would be comparatively minor compared to the rest of the ongoing O&M at the site.

**Public Comment 11:** *One commentor indicated that Alternative F would provide source-control that would not only reduce the oxyhydroxide sediment load to all of the Blackbird Creek, but also improve the aesthetic appeal of the entire creek. The commentor believes that Alternative F deserves to be included in the evaluation of alternatives because it may be the most protective long-term alternative.*

**Response 11:** EPA will continue to evaluate the need for treatment of the oxyhydroxide floes generated at the West Fork Tailings Impoundment. If EPA determines that treatment is necessary, a separate decision document will be prepared to address treatment.

**Public Comment 12:** *One commentor indicated that, when the pollutants enter the Salmon River, adequate dilution occurs now. The commentor suggested that, if a pipeline were to be constructed from Blackbird Creek to the Salmon River, this pipeline would duplicate what is happening now. The commentor questioned the expenditure of money trying to do anything that has already been studied. The commentor indicated that nothing in the ESD or related documents proves that contamination will not reoccur during spring runoff or during a cloudburst anytime.*

**Response 12:** The concept of a pipeline to transport Blackbird Creek waters directly to the Salmon River has never been considered or studied. A pipeline sufficiently sized to transport the peak flows of Blackbird Creek would be extremely expensive (on the order of \$30 to 50 million) and would not

provide significantly greater protectiveness than the cleanup alternatives that have been studied. EPA agrees that there is a risk of recontamination along Panther Creek during spring runoff or during a thunderstorm until the Blackbird Creek stabilization structures become fully effective. That is one of the primary reasons that EPA proposed the settling basins—to reduce the risk of recontamination along Panther Creek.

**Public Comment 13:** *One commentor indicated that removing arsenic and other contaminants from Panther Creek in Idaho is like putting the mountain tops back in West Virginia. Neither replacing the mountain tops nor the creek projects may be possible. In the Draft BCER, dated April 10 2009, the commentor could not find an overall assessment. If contaminants have been leaking for 30 years or even one year, the commentor questioned exactly how the work described in the ESD was going to fix the problem. The commentor did not understand where the sediment goes, what will contain that sediment, and how long it will be contained.*

**Response 13:** Most of the contaminants in the Blackbird Creek sediments were deposited during the years of active mining at the Blackbird Mine. Some of the contaminants have been deposited or transported from upstream in the years after most of the active mining ceased in the 1960s. The BCER contains an overall assessment of the alternatives to address the risk of recontamination along Panther Creek from the Blackbird Creek sediments. This assessment is included in Section 6 of the BCER. The contaminated sediments from Blackbird Creek are currently transported during high flow events down Panther Creek. Some of these sediments are deposited at in-stream and overbank areas along Panther Creek, and some of the finer-grained sediments are transported all the way to the Salmon River. The proposed settling basins would have captured most of the remaining contaminated sediments along Blackbird Creek that can still be mobilized, which would prevent their release into Panther Creek.

**Public Comment 14:** *One commentor indicated that the water quality monitoring conducted by the BMSG in Panther Creek since 2004 has indicated that dissolved cobalt concentrations have not exceeded the revised cobalt cleanup level of 86 µg/L in any sampling event. Therefore, the requirement for collection and treatment of seepage from the West Fork Tailings Impoundment may no longer be necessary, as long as the dissolved cobalt concentrations in Panther Creek do not exceed the revised cobalt water quality cleanup level of 86 µg/L. However, sampling conducted by the Idaho Department of Environmental Quality (IDEQ) during late winter/early spring 2008 indicated that the dissolved cobalt concentrations in Panther Creek may have temporarily exceeded the revised cobalt water quality cleanup level during this period. The commentor questioned whether the cobalt standard had been exceeded and did not know where to find the data that substantiates either exceedances or non exceedances of the cobalt standard.*

**Response 14:** IDEQ periodically conducts water quality sampling at the site independent from the BMSG sampling. The IDEQ sampling tends to be grab sampling (usually a single sample) conducted during site visits by IDEQ. The 2003 ROD contains specific detailed sampling and quality assurance protocols that the BMSG must follow for determining if water quality cleanup standards are being met at the various sampling stations. The water quality standard for cobalt in the 2003 ROD is called a “chronic” standard, which means that the cobalt standard must be exceeded for a minimum of 96 hours before determination that there has been an “exceedance” of the standard. The BMSG conducts sampling in Panther Creek and Big Deer Creek three times in the spring and once in the fall to determine if exceedances of the cobalt (and copper) standards are occurring. This sampling entails collecting 12 samples from each location over a 96-hour period. The results of the 96-hour sampling are then run through a rigorous statistical analysis to determine if a statistically significant exceedance of the chronic standards has occurred. Since 2004, the cobalt water quality standard has not been exceeded during any of the BMSG’s 96-hour sampling events in Panther Creek or Big Deer Creek. Because the IDEQ sampling was not conducted over a 96-hour period, it cannot be determined if a statistically significant

exceedance has occurred in accordance with the requirements set forth in the 2003 ROD. Regardless, EPA has required that the BMSG conduct supplemental sampling to determine if there are elevated concentrations of cobalt occurring in Blackbird Creek and Panther Creek during the late winter/early spring period. If elevated cobalt concentrations were consistently occurring during this time frame, EPA may have modified the timing for the required 96-hour sampling events to include the late winter/early spring time frame. However, none of this supplemental sampling conducted by the BMSG has been able to duplicate the elevated concentrations that have been reported by IDEQ. The results of the 96-hour sampling are included each year in a document prepared by the BMSG called the *Blackbird Mine Monitoring Report*. Copies of the annual *Blackbird Mine Monitoring Report* can be reviewed at the EPA offices.

**Public Comment 15:** *One commentor indicated that the additional removals and stabilization along Blackbird Creek had been completed in 2009 and 2010; however, the results from those actions were not addressed in the ESD or supporting documentation. The commentor questioned where the results could be found that describe the effectiveness of the 2009 and 2010 actions.*

**Response 15:** A monitoring program along Blackbird Creek began in the fall of 2011 to determine the effectiveness of the stabilization structures and to refine the estimates of the amount of time required before the stabilization structures become fully effective. This monitoring program will be conducted for a minimum of two years. An evaluation of the monitoring results and a refinement of the estimate of the time to achieve full effectiveness will be conducted at that time.

**Public Comment 16:** *One commentor questioned a reference to additional sampling that had been conducted at the (b)(6) property and questioned where the results of this additional sampling could be located/reviewed.*

**Response 16:** Cleanups were conducted at the (b)(6) property in 2004 (when it was known as the (b)(6) Property) and again in 2009. The results of the post-removal sampling at the (b)(6) property can be found in the *Final Report on 2004 Construction for the Panther Creek Overbank Removal for the (b)(6) and (b)(6) Properties*, dated May 23, 2005, and the *2009 Post-Removal Characterization and Construction Completion Report*, dated April 29, 2011. Both reports were prepared by Colder Associates for the BMSG. Copies of these documents can be reviewed at the EPA offices in Boise and Seattle.

**Public Comment 17:** *One commentor questioned the protocols for sampling of overbank sediments that were collected for Appendix F of the BCER. In particular the commentor questioned why the protocols called for collection of five samples from each site, with those samples composited into a single sample for analysis. The commentor was concerned that compositing the samples would tend to dilute out the pollution.*

**Response 17:** The sampling for Appendix F of the BCER was not to determine whether the cleanup standards had been exceeded at a particular depositional area. Rather, the goal of the sampling conducted for Appendix F was to collect samples that would be representative of the sediments that had been deposited over the entire area of selected overbank deposits. The contaminant concentrations in overbank areas tend to vary widely. Therefore, for the analyses that were conducted for Appendix F, the collection of five samples composited into a single sample provided the best method for preparing a sample that was representative of the entire depositional area. It should be noted that, when the goal of sampling is to determine if the cleanup standards have been exceeded at a particular overbank depositional area, the sampling protocols require collection of multiple discrete samples that are not composited.

**Public Comment 18:** *One commentor questioned how the temperature increases could be accurately predicted in Blackbird Creek waters as a result of the settling basins, given global warming.*

**Response 18:** The temperature model used to predict the thermal effects of the sediment basins does not include input parameters or equations that incorporate the effects of global warming. In addition, because global warming is a comparatively long-term phenomenon, the effects of global warming could not likely be accurately predicted or measured for the comparatively short period that the settling ponds would be in place.

**Public Comment 19:** *One commentor felt that there should be more signs posted in the area making the public aware of the contamination in the area. The commentor was sure people would make a different choice regarding being in the area if they were aware of the contamination.*

**Response 19:** Contaminated overbank deposits have been removed and replaced with clean soils in most areas along Panther Creek. There are only a few properties with elevated contaminant concentrations in overbank areas that require removals. The contaminant concentrations in these areas are below the recreational cleanup levels with the exception of two small areas with contaminant concentrations slightly above the recreational cleanup levels. Because the cleanup levels are based on long term exposures and these areas will be removed in the near future, EPA has determined that signs are not warranted at this time.

**Public Comment 20:** *One commentor indicated that he believed that the E.P.A. was established to protect the land and citizens of the United States, and he would like to see some measure of accountability from the Blackbird Mine and whatever agency is in charge. The commentor also felt that no one wants to be accountable for the serious issues that have taken place at the Blackbird Mine site and that, in his opinion, the contamination from the site has been downgraded.*

**Response 20:** EPA has been involved at the Blackbird Mine site since the early 1990's. The EPA has entered into several Administrative Orders with the BMSG to perform cleanup actions under EPA oversight which have been ongoing since the early 1990's.

**Public Comment 21:** *Several commentors provided comments and/or questions regarding issues that are not related to the ESD. These issues included: previous cleanups of interiors of residences along Panther Creek, perceived health-related issues associated with pre-cleanup contamination, mental health issues that the commentors attribute to the BMSG and the contamination, questions regarding the methods for demolition of structures at the Panther Creek Inn, and the potential for contamination in the Big Deer Creek drainage by the Idaho Cobalt Project.*

**Response 21:** EPA is concerned about the issues raised by these commentors. However, because the comments and/or questions are not relevant to the ESD, a response has not been provided in this responsiveness summary.